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PATENT

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1/17/01  
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Patricia K. Simon  
Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

EISENBERG et al.

Serial No.: 09/535,088

Group Art Unit: 1643

Filing Date: March 23, 2000

Examiner: Unassigned

Title: ZINC FINGER PROTEIN COMPOSITIONS

**REQUEST FOR A CORRECTED FILING RECEIPT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please furnish the undersigned with a corrected filing receipt for the above-identified application. The corrections needed are as follows:

Under "CONTINUING DATA AS CLAIMED BY APPLICANT" please delete each occurrence of the phrase "WHICH CLAIMS BENEFIT OF" before "60/126,239", "60/146,596" and "60/146,615".

Attached is a copy of the Filing Receipt with the correction highlighted. Also included is a copy of page 1 of the application (see first paragraph headed "Cross-References to Related Applications").

It is believed that no fee is due. If for any reason a fee is found to be necessary, our Deposit Account No. 18-1648 may be charged therefor.

Respectfully submitted,

Date: Jan 12, 2001

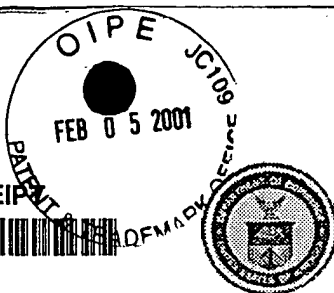
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## CORRECTED FILING RECEIPT



\*OC00000005312508\*

UNITED STATES DEPARTMENT  
COMMERCE  
Patent and Trademark OfficeAddress: ASSISTANT SECRETARY AND  
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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/535,088	03/23/2000	1643	410	19496-003020US	1	17	3

20350  
TOWNSEND AND TOWNSEND AND CREW LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111

019496-003020US  
Joliebeschultz

Date Mailed: 08/10/2000

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the PTO processes the reply to the Notice, the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

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## Continuing Data as Claimed by Applicant

THIS APPLN CLAIMS BENEFIT OF 60/126,238 03/24/1999 ;  
~~WHICH CLAIMS BENEFIT OF 60/126,239 03/24/1999 ;~~  
~~WHICH CLAIMS BENEFIT OF 60/146,596 07/30/1999 ;~~ AND  
~~WHICH CLAIMS BENEFIT OF 60/146,615 07/30/1999~~

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## Foreign Applications

If Required, Foreign Filing License Granted 05/23/2000

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## Title

Zinc finger protein compositions

## Preliminary Class



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## ZINC FINGER PROTEIN COMPOSITIONS

### CROSS-REFERENCES TO RELATED APPLICATIONS

The present application claims priority to U.S. provisional applications 60/126,238, filed March 24, 1999, 60/126,239 filed March 24, 1999, 60/146,596 filed July 30, 1999 and 60/146,615 filed July 30, 1999, all of which are incorporated by reference in their entirety for all purposes.

### BACKGROUND

Zinc finger proteins (ZFPs) are proteins that can bind to DNA in a sequence-specific manner. Zinc fingers were first identified in the transcription factor TFIIIA from the oocytes of the African clawed toad, *Xenopus laevis*. An exemplary motif characterizing one class of these protein ( $C_2H_2$  class) is -Cys-(X)<sub>2-4</sub>-Cys-(X)<sub>12</sub>-His-(X)<sub>3-5</sub>-His (where X is any amino acid) (SEQ. ID. No:1). A single finger domain is about 30 amino acids in length, and several structural studies have demonstrated that it contains an alpha helix containing the two invariant histidine residues and two invariant cysteine residues in a beta turn co-ordinated through zinc. To date, over 10,000 zinc finger sequences have been identified in several thousand known or putative transcription factors. Zinc finger domains are involved not only in DNA-recognition, but also in RNA binding and in protein-protein binding. Current estimates are that this class of molecules will constitute about 2% of all human genes.

The x-ray crystal structure of Zif268, a three-finger domain from a murine transcription factor, has been solved in complex with a cognate DNA-sequence and shows that each finger can be superimposed on the next by a periodic rotation. The structure suggests that each finger interacts independently with DNA over 3 base-pair intervals, with side-chains at positions -1, 2, 3 and 6 on each recognition helix making contacts with their respective DNA triplet subsites. The amino terminus of Zif268 is situated at the 3' end of the DNA strand with which it makes most contacts. Some zinc fingers can bind to a fourth base in a target segment. If the strand with which a zinc finger protein makes most contacts is designated the target strand, some zinc finger